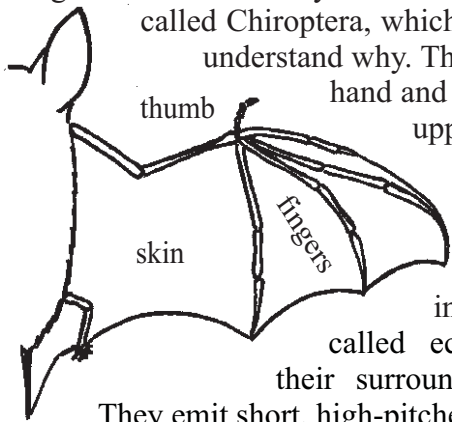


BIOLOGY

While bats elicit a wide range of reactions from individuals, many are fascinated and intrigued by this winged wonder. The only mammals that can sustain flight, bats comprise an order (group) of animals called Chiroptera, which means “hand wing.” When you look closely at a bat's wing you understand why. The wing is made up of two layers of skin covering the bones of the hand and arm. The thumb and four fingers make up half the wing, with the upper arm and forearm accounting for the other half.



With each finger working independently, bats have amazing flying skills. Hovering in place, swooping, diving and “turning on a dime” are just a few of their abilities. These are all necessary when in hot pursuit of evasive insect prey. Bats use a special sensory system called echolocation to evaluate their surroundings and locate food. They emit short, high-pitched sounds that bounce off of surrounding objects and return to them as echoes, which are used to determine the size, distance, direction and movement of objects around them, including insects they catch and eat.

Of equal interest are the longevity and birth rates of bats. Most small mammals (mice, voles, rats, etc.) produce several litters of many young each year but live only 1-2 years. By contrast, bats typically have a single litter of only one or two offspring per year and can live in the wild for over 15 years!

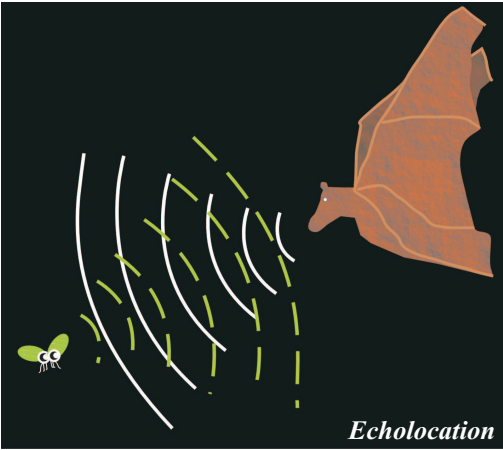
VIRGINIA'S STATE BAT: THE VIRGINIA BIG-EARED BAT



Photo by Jason Duffey, Environmental Solutions & Innovations

In the 2005 General Assembly, a rare and unique bill arose—a proposal for adopting a state bat. The Virginia big-eared bat was recommended based on its name and status as a federally endangered species. Governor Mark Warner signed the legislation, making Virginia only the second state (after Texas) to adopt a state bat.

The Virginia big-eared bat is about 4 inches long, weighs less than half an ounce and feeds mainly on moths. This bat lives exclusively in limestone caves in a few isolated populations in the mountains of western Virginia, West Virginia, Kentucky and North Carolina. The large ears, which it can fold tightly against its head, are this bat’s most conspicuous feature. Human disturbance of caves used for hibernation and those used for raising of offspring (maternity colonies) are the biggest threats to the species.



HEALTH ISSUES

In the winter of 2007, large numbers of bats in the Northeast died from white nose syndrome, named after the characteristic fungus that appears on most affected bats. As of fall 2008, no cases were documented south of Pennsylvania. Biologists are watching for signs of the disease in Virginia’s bats.

Two human health issues associated with bats are histoplasmosis and rabies. Histoplasmosis, a lung disease caused by a different, microscopic fungus found in bat guano, is typically contracted by inhaling airborne fungal spores in an enclosed area, such as an attic or barn. Hiring a professional cleaning service or wearing an appropriate respirator can reduce the risk of this disease.

Though very few bats carry rabies, occasionally cases are attributed to them. Their small teeth make bite wounds difficult to detect. Anyone suspecting a bat bite should seek medical attention immediately and if possible turn the bat over to authorities for testing. Avoid rabies by leaving wild animals alone, particularly those behaving abnormally. For bats this might include daytime activity and the inability to fly.

INFORMATION LINKS

- VA DCR Natural Heritage Program
www.dcr.virginia.gov/natural_heritage/karst_bats.shtml
- VA Department of Game and Inland Fisheries
www.dgif.virginia.gov/wildlife/information/
- U. S. Forest Service
www.fs.fed.us/biology/wildlife/bats.html
- U. S. Fish and Wildlife Service
www.fws.gov/endangered/bats/bats.htm
- Southeastern Bat Diversity Network: www.sbdn.org
- Bat Conservation International: www.batcon.org
- Centers for Disease Control and Prevention:
www.cdc.gov/rabies/bats.html
- White Nose Syndrome:
www.fws.gov/northeast/white_nose.html



Eastern pipistrelle

Photo by Phil Lucas

VIRGINIA'S BATS AT A GLANCE



Big brown bat

DIVERSITY

Bats are one of the most diverse mammal groups. There are more than 1,000 species worldwide, comprising about one-fifth of all mammal species. Forty-five bat species are native to the United States. Situated in the mid-Atlantic region, Virginia shares the diversity of bat species found in both the Northeast and the Southeast.



©Merlin D. Tuttle, Bat Conservation International

For the most part, bats may be divided into two broad sub-groups, fruit-eating bats and insect-eating bats. Fruit-eating bats are found only in the tropics and consume fruits, nectar, and pollen. Insect-eating bats, found in both tropical and temperate climates, feed predominantly on insects. Insect-eating bats in temperate climates, such as the eastern United States, are forced to hibernate during the winter months when insects are scarce. All bat species that reside in Virginia are insectivorous.



Little brown bats hibernating in small clusters

BATS IN VIRGINIA

Seventeen species of bats have been documented in Virginia, although only 15 are likely to reside in the state. (* indicates state or federal endangered species)

Tree Bats

- Nycticeius humeralis* - Evening bat
- Lasionycteris noctivagans* - Silver-haired bat
- Lasiurus seminolus* - Seminole bat
- Lasiurus borealis* - Eastern red bat
- Lasiurus cinereus* - Hoary bat
- Myotis austroriparius* - Southeastern bat
- Corynorhinus rafinesquii macrotis* - Southeastern big-eared bat*



Cluster of hibernating Indiana bats

Photo by Steve Croy



An eastern red bat with twin pups.

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Cave Bats

- Perimyotis subflavus* - Eastern pipistrelle bat
- Myotis lucifugus* - Little brown bat
- Eptesicus fuscus* - Big brown bat
- Myotis grisescens* - Gray bat*
- Myotis sodalis* - Indiana bat*
- Myotis septentrionalis* - Northern long-eared bat
- Myotis leibii* - Eastern small-footed bat
- Corynorhinus townsendii virginianus* - Virginia big-eared bat*

Nonresident Visitors

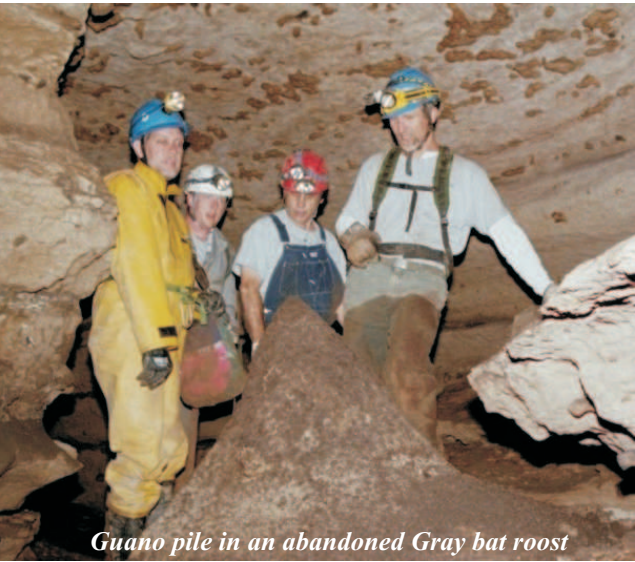
- Lasiurus intermedius* - Northern yellow bat
- Tadarida brasiliensis* - Brazilian free-tailed bat

CONSERVATION

Bats are an essential and beneficial part of natural ecosystems. Consuming over half their body weight in insects each night, bats are an important natural insecticide and the only major predator of night-flying insects. Bat research has contributed to major scientific discoveries in the fields of vaccine development, artificial insemination, sonar and blood coagulation.



Building a gate to protect a Gray bat cave



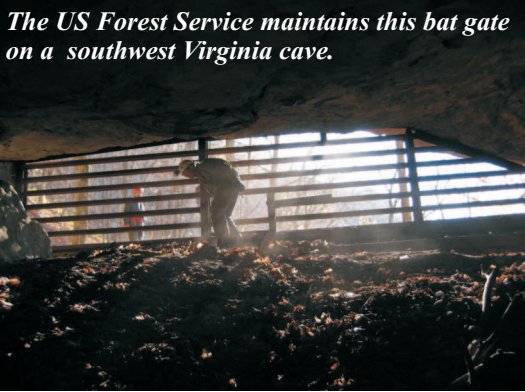
Guano pile in an abandoned Gray bat roost

In Virginia, four bat species are listed as endangered. Three cave species, the Gray, Indiana and Virginia big-eared bats, are federally endangered. One tree bat, the Southeastern big-eared bat, is state endangered. The decline of these four species is due primarily to loss of habitat and disturbance by humans. The low reproductive rates of most bat species means that it takes a long time for their populations to recover from large population declines.

The Virginia Department of Conservation and Recreation’s Natural Heritage Program and the Department of Game and Inland Fisheries Nongame Wildlife Program work with public and private stakeholders to protect bats. Numerous bat-friendly cave gates have been built with the help of the U.S. Forest Service, U.S. Fish and Wildlife Service, Bat Conservation International(BCI), the American Cave Conservation Association, and The Nature Conservancy, allowing bats to move freely while reducing human disturbance of hibernating bats and maternity colonies.



©Merlin D. Tuttle, Bat Conservation International



The US Forest Service maintains this bat gate on a southwest Virginia cave.

Other efforts to stabilize or increase populations of rare bats in Virginia include land purchases, conservation easements and education programs. A current issue is the development of wind farms, where bladed turbines sometimes kill large numbers of bats, either directly or by inducing extremely rapid changes in air pressure. With cooperation between the public and private sectors, bats can continue to perform valuable pest control and other ecological functions that benefit both the environment and citizens of Virginia.